# A Calculation of SU(3) Clebsch-Gordan Coefficients for Bottom Meson Decays*

Weng-long Lin

Department of Physics
College of Sciences

Abstract

The Clebsch-Gordan coefficients for the product of SU(3) representations $3^* \otimes 15$, required for the calculation of the SU(3) amplitudes of bottom meson decays, are obtained by adopting the phase convention of Baird and Biedenharn.

## I. INTRODUCTION

The recent discovery[1] of three extremely narrow states $\gamma$ (9, 4), $\gamma'$(10.0), $\gamma''$ (10.3) suggests the existence of a new quantum number called "bottom." Consequently, there should also be new flavored particles, called "bottom particles," which carry this new quantum number. That this is indeed the case is evidenced by the discovery[2] of a fourth resonance $\gamma'''$ (10.5), which has a broad width of about 20 MeV. The broad width of $\gamma'''$ suggests that $\gamma'''$ decays directly into $B\bar{B}$ pairs, each carrying a single bottom quark. We are thus provided with a source of B mesons whose decay we can observe.

A study of the decays of bottom mesons may provide us with useful information on the nature of weak interactions. However, the nonleptonic decays are complicated by the interplay of weak and strong interactions. At present, a reliable dynamical calculation of the QCD corrected decay rate is still lacking. On the other hand, the symmetry approach is expected to provide a reliable framework for systematic study on nonleptonic decays[3,4]. Since $m_b >> m_c$ the